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			J.S. Patent Documen	ts			
nit.	Document No.	Date	Name		Class	Subclass	Filing Date
/JB/	4,689,449	08/25/1987	Rosen			/\	
/JB/	4,758,692	07/19/1988	Roeser et a	l			
/JB/	4,857,881	08/15/1989	Hayes				
/JB/	4,994,669	02/19/1991	Stern				
/JB/	5,223,776	06/29/1993	Radke et a	l <u>. </u>			
/JB/	5,228,356	07/20/1993	Chuang				
/JB/	5,436,640	07/25/1995	Reeves				
/JB/	5,589,828	12/31/1996	Armstrong				
/JB/	5,589,854	12/31/1996	Tsai				
/JB/	5,629,594	05/13/1997	Jacobus et	al.	Λ		
/JB/	5,724,068	03/03/1998	Sanchez et	al.		$1 / \Lambda$	
/JB/	5,731,804	3/24/1998	Rosenberg	1			
/JB/	5,739,811	04/14/1998	Rosenberg e	al.			
/JB/	5,742,278	04/21/1998	Chen et al				
/JB/	5,754,023	05/19/1998	Roston et a	I			
/JB/	5,805,140	09/08/1998	Rosenberg e	al.			
/JB/	6,201,533	3/13/2001	Rosenberg e	al.	7	/	
/JB/	6,697,048	2/24/2004	Rosenberg e	al.		V	
	Other Doc	uments (Includ	ding Author, Title, D	ate, Perti	inent Pages, e	tc.)	
/JB/			of a Four Degree-o				
			space," Depart. Of Cost Force Feedba				
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/JB/			Design and Implem				dom Force
			nanical Engineering, on Areas For A Ford				Advanced
JB/			Haptic Interfaces, A				, Auvanceu
(10)	Tadros, Alfred He	ikal, "Control	System Design for a	Three C	egree of Fre	edom Virtual	Environmen
/JB/	1990, pp. 2-88.	Motor/Brake Pa	air Actuators," Dept	of Mech	ianical Engin	eering, MIT F	ebruary
JB/	Yamakita, M. et a	II., "Tele Virtua Itional Confere	al Reality of Dynami ence on Interligent R	c Mechar	nical Model," d Systems.	Proceedings July 7-10, 199	of the 1992 92, pp. 1103
	1110.						
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Form PT	(5) (449 (2)	U.S. Department Patent and Traden			IMMR-0		Serial 10/78		
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/JB/	A	5,456,341	10/10/1995	Garnjost et al.					
/JB/	В	6,704,001	03/09/2004	Schena et al.					
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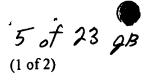


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PTO/SB/08A (10-01)
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Substitute for form 1449A/PTO Complete if Known 10/780,852 **Application Number** INFORMATION DISCLOSURE Filing Date February 19, 2004 STATEMENT BY APPLICANT First Named Inventor Louis B. Rosenberg 2173 Art Unit (use as many sheets as necessary) Unassigned **Examiner Name IMMR-050/04US** Sheet of 3 **Attorney Docket Number**

		Document Number			
Examiner	Cite No.1	Number Kind Code ² (# known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevan Figures Appear
/JB/		6,422,941	7/23/2002	Thomer et al.	
/JB/		6,160,489	12/12/2000	Perry et al.	
/JB/		6,111,577	8/29/2000	Zilles et al.	
/JB/		5,690,582	11/25/1997	Ulrich et al.	
/JB/		5,575,761	11/19/1996	Hajianpour	
/JB/		5,437,607	8/1/1995	Taylor	
/JB/		5,436,622	7/25/1995	Gutman et al.	
/JB/		5,283,970	2/8/1994	Aigner	
/JB/		5,186,695	2/16/1993	Mangseth et al.	
/JB/		5,175,459	12/29/1992	Danial et al.	
/JB/		5,165,897	11/24/1992	Johnson	
/JB/		5,022,384	6/11/1991	Freels	
/JB/		4,885,565	12/5/1989	Embach	
/JB/		4,484,191	11/20/1984	Vavra	
/JB/		4,464,117	8/7/1984	Foerst	
/JB/		4,333,070	6/1/1982	Bames	· · · · · · · · · · · · · · · · · · ·
/JB/		4,262,549	4/21/1981	Schwellenbach	
/JB/		4,127,752	11/28/1978	Lowthorp	
/JB/		2,972,140	2/14/1961	Hirsch	

5	0.44	Foreign Patent Document			Name of Patentee or	Pages, Columns, Lines, Where Relevant		
Examiner Initials*	Cite No.1	Country Code 3	Number ⁴	Kind Code ^s (il known)	Publication Date MM-DD-YYYY		Applicant of Cited Document	Passages or Relevant Hgures Appear
		.IP	H2-185278		7/19/1990	Taito Corporation		
		JP	H4-8381		1/13/1992	Froch Co. and Key- Planning Co.		
		JP	H7-24147		1/27/1995	Sega Corporation		
		JP	H5-192449		8/3/1993	Taito Corporation		

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Substitute for form 1449A/PTO Complete if Known 10/780,852 **Application Number** INFORMATION DISCLOSURE Filing Date February 19, 2004 STATEMENT BY APPLICANT First Named Inventor Louis B. Rosenberg Art Unit 2173 (use as many sheets as necessary) Examiner Name Unassigned IMMR-050/04U9 2 Sheet Attorney Docket Number

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner Initials *	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for interaction with Virtual and Remote Environments," Master of Science Thesis, MIT, Aug. 1990, archived Nov. 8, 1990.	
		CALDER, "Design of A Force Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, May 1983, archived June 23, 1983.	
		WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, July 1988.	
		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.	
		JOHNSON, "Shape-Memory Alloy Tactile Feedback Ctuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, Harvard Univ., 1995.	
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.	
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1993.	
		GOBEL et at., "Tactile Feedback Applied to Computer Mice," International Yournal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1965.	
		PIMENTEL et al., "Vi tual Reality: through the new looking glass," 2 rd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
		Cyberman Temnical Specification, Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide, 4/5/1994.	
-11-		OUHYOU'G et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
		KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies, Chap. 9, pp. 349-414.	_
		LAKE, "Cyberman from Logitech," at http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html, 1994.	

Examiner	Date	
Signature	Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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				Art Unit	2173		
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Sheet	3	of	3	Attorney Docket Number	IMMR-050/04US		

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Examiner Initials *	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
		Component Maintenance Manual With Illustrated Parts List, Coavier Control Shaker Part no. C-25502, Safe Flight Insurancet Corporation, Revised 28 January 2002 (3.00ges).					
		"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part no. C-25502," Safe Flight Instrument Constraint, Revised 15 July 1980 (25 pages)					
		SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994	-				
/JB/		YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992					
		NOLL, Man Mochine Tactile," SID Journal, July/August 1972 Issue.					
		ROSENBERG. "Vidual Finances: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," Ph.D. Bissertation, Stanford University, June 1994.					

			
Examiner Signature	/Jeffery Brier/	Date Considered	09/24/2007

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Application Number	10/780,852				
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First Named Inventor	Louis B. ROSENBERG				
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			U.S. PATENT DO	CUMENTS		
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Examiner	Cite No.1	Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Pate Applicant of Cited		Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/JB/		6,057,828	05-2000	Rosenberg et al	•	
/JB/		6,050,718	04-2000	Schena et al.		
/JB/		6,046,727	04-2000	Rosenberg et al		
/JB/		6,037,927	03-2000	Rosenberg		
JJB/		5,944,151	08-1999	Jakobs et al.		
JJB/		5,889,672	03-1999	Schuler et al.		
/JB/		5,880,714	03-1999	Rosenberg et al		
/JB/		5,823,876	10-1998	Unbehand		
/JB/		5,781,172	07-1998	Engel et al.		
/JB/		5,769,640	07-1998	Jacobus et al.		
/JB/		5,739,811	04-1998	Rosenberg et al		
-/JB/		5,714,978	02-1998	Yamanaka et al.		
/JB/		5,704,791	01-1998	Gillio		
/JB/ 1		5,701,140	12-1997	Rosenberg et al		
/JB/		5,691,898	11-1997	Rosenberg et al		
/JB/		5,656,901	08-1997	Kurita		
/JB/		5,634,794	06-1997	Hildreth et al.		Ì
- /JB/		5,623,582	04-1997	Rosenberg		
/JB/		5,591,082	01-1997	Jensen et al.		
JJB/		5,542,672	08-1996	Meredith		
/JB/		5,532,585	07-1996	Oudet et al.		
/JB/		5,512,919	04-1996	Araki		
/JB/		5,473,235	12-1995	Lance et al.		
- '7JB/		5,467,763	11-1995	McMahon et al.		
JB/		5,459,382	10-1995	Jacobus et al.		
/JB/		5,451,924	09-1995	Massimino et al.		
		5,451,204	09-1995	Massimino et al.		
JB/		5,445,166	08-1995	Taylor		
7JB/		5,436,542	07-1995	Petelin et al.		
JJB/		5,428,748	06-1995	Davidson et al.		
/JB/		5,417,696	05-1995	Kashuba et al.		
/JB/		5,412,880	05-1995	Raab		
/JB/		5,402,582	04-1995	Raab		
/JB/		5,397,323	03-1995	Taylor et al.		
ΊĴΒΊ (5,396,266	03-1995	Brimhall		
/JB/		5,389,865	02-1995	Jacobus et al.		
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Substitute for form 1449A/PTO Complete if Known 10/780,852 **Application Number** INFORMATION DISCLOSURE **Filing Date** February 19, 2004 STATEMENT BY APPLICANT First Named Inventor Louis B. ROSENBERG 2173 Art Unit (use as many sheets as necessary) **Examiner Name** Unassigned 8 IMMR050/04US Sheet 2 of Attorney Docket Number

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Examiner	Cite No.	Number Kind Code ² (# known)	Publication Date MM-DD-YYYY	Name of Pater Applicant of Cited	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/JB/		5,384,460	01-1995	Tseng	
/JB/		5,381,080	01-1995	Schnell et al.	
/JB/		5,351,692	10-1994	Dow et al.	
/JB/		5,286,203	02-1994	Fuller et al.	
/JB/		5,262,777	11-1993	Low et al.	
JB/		5,259,894	11-1993	Sampson	
JB/		5,259,120	11-1993	Chapman et al.	
/JB/		5,251,156	10-1993	Heier et al.	
/JB/		5,251,127	10-1993	Raab	
/JB/		5,243,266	09-1993	Kasagami et al.	
/JB/		5,235,868	08-1993	Culver	
JB/		5,230,623	07-1993	Guthrie et al.	
/JB/		5,220,260	06-1993	Schuler	
		5,210,940	00-1993	Wilterell et al.	
/JB/		5,209,131	05-1993	Baxter	
/JB/		5,204,824	04-1993	Fujimaki	
/JB/	-	5,197,003	03-1993	Moncrief et al.	
/JB/		5,189,806	03-1993	McMurtry et al.	
/JB/		5,189,355	02-1993	Larkins et al.	
/JB/		5,187,874	02-1993	Takahashi et al.	
7JB/		5,184,306	02-1993	Erdman et al.	
/JB/		5,181,181	01-1993	Glynn	
JB/		5,178,012	01-1993	Cuip	
/JB/		5,148,377	09-1992	McDonald	
/JB/		5,142,506	08-1992	Edwards	
/JB/		5,139,261	08-1992	Openiano	
/JB/		5,132,672	07-1992	Clark	
/JB/		5,131,844	07-1992	Marinaccio et al.	
/JB/		5,128,671	07-1992	Thomas, Jr.	-
/JB/		5,126,948	06-1992	Mitchell et al.	
/JB/		5,116,180	05-1992	Fung et al.	
/JB/		5,107,262	04-1992	Cadoz et al.	
/JB/		5,095,303	03-1992	Clark et al.	
/JB/ 1		5,088,055	02-1992	Oyama	
/JB/		5,088,046	02-1992	McMurtry et al.	
/JB/		5,076,517	12 1991	Ferranti et al.	

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Application Number	10/780,852					
Filing Date	February 19, 2004					
First Named Inventor	Louis B. ROSENBERG					
Art Unit	2173					
Examiner Name	Unassigned					
Attorney Docket Number	IMMR050/04US					

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/JB/		5,072,361	12-1991	Davies et al.	
/JB/		5,050,608	09-1991	Watanabe et al.	
/JB/		5,040,306	08-1991	McMurtry et al.	
/JB/		5,007,085	04-1991	Greanias et al.	
/JB/		4,983,901	01-1991	Lehmer	
/JB/ 1		4,983,786	01-1991	Stevens et al.	
-jjb/		4,982,504	01-1991	Soderberg et al.	
/JB/		4,962,591	10-1990	Zeller et al.	
/JB/		4,961,267	10-1990	Herzog	
/JB/		4,961,138	10-1990	Gomiak	
/JB/		4,945,501	07-1990	Bell et al.	
/JB/		4,945,305	07-1990	Blood	
/JB/		4,942,545	07-1990	Sapia	
/JB/	· · ·	4,907,973	03-1990	Hon	
/JB/		4,907,970	03-1990	Meenen, Jr.	
/JB/		4,891,889	01-1990	Tomelleri	
/JB/		4,888,877	12-1989	Enderle et al.	
7JB/		4,879,556	11-1989	Dulmel	
/JB/		4,874,998	10-1989	Hollis, Jr.	
/JB/		4,868,549	09-1989	Affinito et al.	
/JB/		4,857,881	08-1989	Hayes	
/JB/		4,849,692	07-1989	Blood	
/JB/		4,839,838	06-1989	LaBiche et al.	
-/JB/		4,823,634	04-1989	Culver	
/JB/		4,819,195	04-1989	Bell et al.	
/JB/		4,798,919	01-1989	Miessler et al.	
-jjbj		4,795,296	01-1989	Jau	
/JB/		4,791,934	12-1988	Brunnett	
/JB/		4,787,051	11-1988	Olson	
-/JB/	_ 	4,769,763	09-1988	Trieb et al.	
/JB/		4,750,487	06-1988	Zanetti	
/JB/		4,706,294	11-1987	Ouchida	
-/JB/		4,703,443	10-1987	Moriyasu	
/JB/		4,688,983	08-1987	Lindbom	
/JB/		4,679,331	07-1987	Koontz	
/3B/		4,677,355	06-1987	Baumann	
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				Art Unit	2173
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/JB/		4,676,002	06-1987	Slocum	
/JB/		4,654,648	03-1987	Herrington et al.	
/JB/		4,653,011	03-1987	Iwano	
/JB/		4,638,798	01-1987	Shelden et al.	
/JB/		4,601,208	07-1986	Watson	•
/JB/		4,593,470	06-1986	Davies	
/JB/		4,571,834	02-1986	Fraser et al.	
7JB/		4,560,983	12-1985	Williams	
/JB/		4,550,221	10-1985	Mabusth	
/JB/		4,477,973	10-1984	Davies	
/JB/		4,391,282	07-1983	Ando et al.	
/JB/		3,944,798	03-1976	Eaton	
/JB/		3,890,958	06-1975	Fister et al.	
/JB/		3,875,488	04-1975	Crocker et al.	
/JB/		3,531,868	10-1970	Stevenson	
/JB/		2,906,179	09-1959	Bower	

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		EP	0085518	A1	08-1983		
	1	wo	96/16397		05-1996		
		wo	96/99944		12-1996		
		JP	4-34010		02-1992		
		GB	225491		10-1992		
		wo	9502233		01-1995	<i></i>	
		wo	9502801		01-1995		
		wo	9520787		08-1995		
		wo	9520788		08-1995		
		wo	9532459		11-1995		
		wo	9616397		05-1999		
		WO	9622591		07-1996		
		wo	9642078		12 1996		
	1	WO	9712357		94-1997		

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		OTHER PRIOR ART NON PATE	NT LITERATUR	E DOCUMENTS			
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		Curso Waldo, "Designer's Corner-Useful Tecl pp. 63.	hnology for Your lo	dea File Dowlgh News," March 7, 1994,			
		Akametsu, et al., "Multimodal Mouse: A Mous Presence, vol. 2, No. 1, Winter 19994, pp. 73	e-Type Device wit	h Tactile and Force Display,"			
		Kelley, et al., "On the Development of a Force User Interface," Symp. on Haptic Interfaces for Mech. Eng. Congress and Exhibition, Nov. 18	or Virtual Environm	nent and Teleoperator Systems, Int'l			
		Hayward, et et., Design and Multi-Objective (from Advances in Robot Kinematics and Comultiblishers, pp. 359-368.	Optimization of a Laputationed Geome	eur, 1994 Kluwer Academic			
		Winey III, Calvin Mccoy, "Computer Simulater and Vehicle Control," MIT., Jun. 1981, pp. 1-7	d Visual and Tactil 79.	e Feedback as an Ald to Manipulator			
/JB/		Tan, Hong Z et al., "Manual Resolution of Cor ASME 1993, DSC-vol. 49, pp. 99-104.	mpliance When W	ork and Force Cues are Minimized,"			
/JB/		Kotoku, Tetsuo, "A Predictive Display with Fo System with Transmission Time Display," IEE					
/JB/		Slocum, Alexander H., Precision Machine De "12-V Voice Coll Motor Driver," Si9961 Jun. 6	sign, Prentice Hall i, 1994, pp. 4-10-4	, 1992, pp. 661-664. 16.			
		Kotoku, Tetsuo et al., "Enviroment Modeling f Systems," IEEE Nov. 3-5, 1991, pp. 99-1004.	or the Interactive (Display (EMID) Used in Telerobotic			
		Bejczy, Antal K., The Phantom Robot: Predictions, pp. 546-550.	dive Displays for I	eleoperation with Time Delay," IEEE			
/JB/		Tan, Hong Z., et al., "Human Factors for the I Srinivasan, Eberman, & Chang, ASME WAM		effecting Haptic Interfaces," Tan,			
/JB/		Iwata, Hiroo et al, Volume Haptization, IEEE	1993, pp. 16-18.				
/JB/		Fischer, Patrick et al., "Specification and Desi	ign of Input Device	es for Teleoperation," 1990.			
		Burdea, Origore et al., "Biotributed Virtual For	ree Feeback," IEE	E, May 2, 1993, pp. 25-44			
/JB/		Rosenberg, Louis B., "The Use of Virtual Fixti Performance in Remote Environments," Air F			_		
Examiner Signature		/Jeffery Brier/	Date Considered	09/24/2007			

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		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS
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/JB/	110.	Rosenberg, Louis B. et al., "Perceptual Decomposition of Virtual Haptic Surfaces," IEEE, Oct. 1993.
/JB/		Rosenberg, Louis B., "Virtual Fixtures as Tools to Enhance Operator Performance in Telepresence Environments" SPIE Telemanipulator Technology, Mar. 1993.
/JB/		Rosenberg, Louis B., "Virtual Haptic Overlays Enhance Performance in Telepresence Tasks," SPIE 1994.
		Burdea, Girgore et al., "Dextrous Telerobotics with Force Feedback-An Overview," Robotica 1991, vol. 9.
		Yamakita, M. et al., Telo Virtual Reality of Dynamic Mechanical Model, IEEE Jul. 7-10, 1992, pp. 1493-1110.
/JB/		Ouh-young, Ming et al., "Force Display Performs Better than Visual Display in a Simple 6-D Docking Task," IEEE 1989, pp. 1462-1466.
		Klm, Won S. et al., "Graphics Displays for Operator Aid in Telemanipulation," IEEE 1991, pp. 1959-1067.
		Hannaford, Blake et al., "Performance Evaluation of a Six Asic Generalized Force-Reflecting Teleoperator," IEEE May/Jun. 1991, vol. 21, No. 3, pp. 620-633.
/JB/		Kim, Won S. et al., A Teleoperation Training Simulator with Visual and Kinesthetic Force Virtual Reality.
/JB/		Burdea, Grigore et al., "A Portable Dextrous Master with Force Feedback," Presence: Teleoperators and Virtual Environments, MIT Press, Jun. 1991.
/JB/		Fisher, S.S. et al., "Virtual Environment Display System," ACM Interactive 3D Graphics, Oct. 1986.
		"The Personal Digitizer.TM.," Immersion Human Interface Corporation 1994.
	 	"High Performance Model of the Immersion Probe." Immersion Probe-MD.TM., Immersion Human Interface Corporation.
		3D Human Interface Tool, Immersion Probe.TM., Immersion Human Interface Corporation 1994.
/JB/		Meyer, Kenneth et al., "A Survey of Position Trackers," The Massachusetts Institute of Technology 1992, Presence, vol. 1, No. 2.

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INFO	RMATIO	N DIS	CLOSURE	Filing Date	February 19, 2004	
STA	TEMENT	BY A	PPLICANT	First Named Inventor	Louis B. ROSENBERG	
•				Art Unit	2173	
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Sheet	18	of	8	Attorney Docket Number	IMMR050/04US	

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		"Useful Technology for Your Idea File," Design News, Mar. 7, 1994, pp. 63.
		Smilli, Scoffrey, "Call It Palpable Progress," Business Week, Oct. 9, 1995, op. 93, 96.
		Herndon, J.N. et al., "The State-of the Art Model M-2 Maintenance System," Proceedings of the 1984 National Topical Meeting on Robotics and Remote Handling in Hostile Environments, American Nuclear Society, pp. 59-65.
		"Proceedings of the IEIP Congress 65," International Federation for Information Processing, Information Processing 1965, vol. 3, New York, May 24-29, 1965, pp. 500.
		Noll, A. Michael, "Man-Machine Tactile Communication Dissertation," Polytechnic Institute of Brooklyn, Jun. 1971, pp. 1-8.
/JB/		Ouh-Young, Ming et al., "Using a Manipulator for Force Display in Molecular Docking," IEEE 1988, pp. 1824-1829.
		Wiker, Steven F. et al., "Development of Tactile Mice for Blind Access to Computers: Importance of Stimulation Locus, Object Size, and Vibrotactile Display Resolution," Proceedings of the Human Factors Society 35th Annual Meeting 1991, pp. 708-712.
		Krueger, Myron W., Artificial Reality 1988, pp. 54-75
		Foot-Operated Mouse, IBM Technical Disclosure Bulletin, Apr. 1986, vol. 28, No. 11.
	 	

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	U.S. PATENT DOCUMENTS							
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/JB/		5,785,630		Bobick, et al.	07/28/1998			
/JB/		5,766,016	· · · · · · · · · · · · · · · · · · ·	Sinclair et al.	06/16/1998			
/JB/		5,547,382		Yamaşakî et al.	08/20/1996			
/JB/		5,466,213		Hogan et al.	11/14/1995			
/JB/_		5,334,027		Wherlock	08/02/1994			
/JB/		5,309,140		Everett, Jr., et al.	05/03/1994			
/JB/	 	5,299,810		Pierce et al.	04/05/1994			
/JB/	 	5,275,174		Cook	01/04/1994			
/JB/		5,271,290		Fischer	12/21/1993			
/JB/		5,240,417		Smithson et al.	08/31/1993			
7JB/		5,212,473		Louis	05/18/1993			
/JB/	 	5,078,152		Bond et al.	01/07/1992			
/JB/	 -	5,038,089		Szakaly	08/06/1991			
· /JB/	 	5,035,242		Franklin et al.	07/30/1991			
/JB/		5,022,407		Horch et al.	06/11/1991			
7JB/		5,019,761		Kraft	05/28/1991			
<u>'/JB/</u>		4,934,694		McIntosh	06/19/1990			
/JB/		4,930,770		Baker	06/05/1990			
/JB/		4,891,764		Meintosh	01/02/1990			
/JB/		4,794,392		Selinko	12/27/1988			
/JB/		4,713,007		Alban	12/15/1987			
/JB/	-	4,708,656	***	de Vries et al.	11/24/1987			
/JB/		4,599,070		Hladky et al.	07/08/1986			
/JB/		4,581,491		Boothroyd	04/08/1986			
/JB/	 	4,513,235		Acklam et al.	04/23/1985			
7JB/		4,236,325		Hall et al.	12/02/1980			
/JB/	 	4,160,508		Salisbury, Jr.	07/10/1979			
/JB/	 	3,911,416		Feder	10/07/1975			
/JB/	 	3,903,614	 	Diamond et al.	09/09/1975			
/JB/	 	3,902,687		Hightower	09/02/1975			
/JB/	 	3,623,064	- 	Kagan	11/23/1971			
/JB/		3,517,446		Corlyon et al.	06/30/1970			
/JB/	 	3,497,668		Hirsch	02/24/1970			

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February 19, 2004

Louis B. ROSENBERG

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7JB/ T		3 22	0,121	I		Cutler	11/30/1965
/JB/					·	Hirsch	11/17/1964
/JB/			7,853 4,669			Stern	02/1991
/JB/			1,533			Rosenberg	03/2000
			4,134			Marcus et al.	12/1999
/JB/ /JB/			1,596			Marshall et al.	11/1998
JD/			6,140			somborg et al.	00/1009
/JB/			0,108			alcudean et al.	08/1998
/JB/			1,804			Rosenberg	03/1998
/JB/ -/JB/			8,356			Chang	07/1993
			2,557			Lang	01/1993
/JB/			4,388			Matthews	12/1988
/JB/ /JB/			8,692			Roeser et al.	07/1988
/JB/ 			2,895			Strandh	09/1974
''JB I			0,059			Paulsen et al.	01/13/1970
/JB/			95,150		· ······	Eckhardt	03/05/1974
/JB/ 			9,691			Noli	11/11/1975
/JB/			18,014			Burson	04/03/1979
/JB/ 1			6,467			Colston	08/05/1980
JJB/			8,889			Lam et al.	08/16/1983
/JB/			4,984			Zarudiansky	11/15/1983
/JB/			6,188		· · · · · · · · ·	Jones	03/13/1984
/JB/ 1			8,083		·····	Hayashi	05/15/1984
/.IR/			7,043			Repperger	10/16/1984
/JB/ T			19,304			Hayes	12/18/1984
/JB/			8,035			Pool	08/27/1985
/JB/			0,617		F	raignier et al.	11/05/1985
/JB/ 1			3,284			Perziey	07/29/1986
/JB/			4,016			Joyce	08/05/1986
/JB/			12,341		R	epperger et al.	12/30/1986
/JB/			19,449			Rosen	08/25/1987
/JB/		4,70	14,909			Grahn et al.	11/10/1987
7JB/			12,101			Culver	12/08/1987
/JB/		4,71	12,971			Fyler	12/15/1987
/JB/		4,77	75,289			Kazerooni	10/04/1988
/JB/		4,80	0,721			emenska et al.	01/31/1989
/JB/		4,80	3,413			Kendig et al.	02/07/1989
/JB/			1,608			Hilton	03/14/1989
/JB/			1,269			Meenen, Jr.	08/29/1989
/JB/			4,998			Hollis Jr.	10/17/1989
/JB/I		4,87	8,374			Nelson	11/07/1989
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Sheet	3	of	8	Attorn	ey Docket Number	IMMR-050/04US	
(10)	1	4.95	79,556			Duimel	11/07/1989
/JB/ /JB/	 		6,554		 	Culver	01/30/1990
/JB/	 				 	Moncrief et al.	08/14/1990
/JB/			19,119			DeMaio et al.	10/09/1990
			52,448			Siva	04/16/1991
/JB/	 		07,300			Behensky et al.	09/03/1991
/JB/ //B/	 		14,956		<u>'</u>	McIntosh	04/07/1992
/JB/			03,404		 	Rosen	04/07/1992
/JB/	 		7,719		 	Kota	04/28/1992
/JB/_						Moncrief et al.	05/26/1992
/JB/ /JB/			16,0 51 12,931			Menahem	09/01/1992
/JB/			13,505			Burdes et al.	09/01/1992
	 		16,566	-	<u> </u>	lollis, Jr. et al.	09/08/1992
/JB/ /JB/	 		32,557		 	Lang	01/26/1993
/JB/			34,319		<u> </u>	Kramer	02/02/1993
/JB/			35,561		 	Good et al.	02/09/1993
/JB/-	 		36,629	·····		Rohen	02/16/1993
/JB/			3,963		<u> </u>	McAffee et al.	03/16/1993
/JB/-	├		23,776			Radke et al.	06/29/1993
/JB/	 		28,356		 	Chuang	07/20/1993
/JB/	 		54,768		1	Gregory et. al.	11/23/1993
/JB/	 		75,565			Moncrief	01/04/1994
/JB/	 		77,281		† · · · · · · · · · · · · · · · · · · ·	Carlson et al.	01/11/1994
/JB/	 		6,846			Ledley	03/22/1994
/JB/	<u> </u>		6,871			Paley	03/22/1994
/JB/			51,412			Furuhata et al.	10/04/1994
/JB/	1		54,162			Burden et al.	10/11/1994
/JB/			55,148			Anderson	10/11/1994
/JB/			79,663			Hara	01/10/1995
/JB/			96,266			Brimhall	03/07/1995
/JB/			6,267			Bouton	03/07/1995
/JB/	Γ)5,152			Katanics et al.	04/11/1995
/JB/			14,337			Schuler	05/09/1995
/JB/		5,42	29,140			Burdea et al.	07/04/1995
/JB/		5,43	36,640			Reeves	07/25/1995
/JB/		5,45	52,615			Hilton	09/26/1995
/JB/		5,51	13,100			Parker et al.	04/30/1996
/JB/		5,56	55,840			Thorner et al.	10/15/1996
_/.IB/			16,727		R	losenberg et al.	11/19/1996
/JB/		5,57	77,981			Jarvik	11/26/1996
/JB/		5,58	37,937			Massie et al.	12/24/1996
/JB/		5,58	39,828			Armstrong	12/31/1996

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Sheet	4	of	8	Attorney Docket Number	IMMR-050/04US	

/JB/	5,589,854	Tsai	12/31/1996
/JB/ 1	5,591,924	Hilton	01/07/1997
/JB/	5,629,594	Jacobus et al.	05/13/1997
/JB/	5,642,469	Hannaford et al.	06/24/1997
/ <u>JB</u> /	5,643,087	Marcus et al.	07/01/1997
/JB/	5,666,138	Culver	09/09/1997
/JB/	5,666,473	Wallace	09/09/1997
/JB/	5,694,153	Aoyagi et al.	12/02/1997
/JB/ L	5,709,219	Chen et ai.	01/20/1998
/JB/	5,721,566	Rosenberg et al.	02/24/1998
/JB/	5,724,068	Sanchez et al.	03/03/1998
/JB/	5,731,804	Rosenberg	03/24/1998
/JB/ 1	5,734,373	Rosenberg et al.	03/31/1998
/3B/ 1	5,742,278	Chen et al.	04/21/1998
/JB/	5,754,023	Roston et al.	05/19/1998
<u> </u>	5,755,577	Gillio	05/26/1998
/JB/ 1	5,767,839	Rosenberg	06/16/1998
/ <u>/JB/</u>	5,784,052	Keyson	07/21/1998
/JB/	5,790,108	Salcudean et al.	08/04/1998
/JB/	5,805,140	Rosenberg et al.	09/08/1998
- /JB/	5,816,105	Adelstein	10/06/1998
7JB/	5,821,920	Rosenberg et al.	10/13/1998
/JB/	5,821,921	Osborn et al.	10/13/1998
/JB/	5,828,363	Yaniger et al.	10/27/1998
/JB/	5,847,528	Hui et al.	12/08/1998
/JB/	5,889,670	Schuler et al.	03/30/1999
/JB/ 1	5,914,705	Johnson et al.	06/22/1999
/JB/	5,979,892	Smith	11/09/1999
/ <u>/JB/</u>	5,984,785	Takeda et al.	11/16/1999
/JB/	6,004,134	Marcus et al.	12/21/1999
/JB/	6,028,593	Rosenberg et al.	02/22/2000
/JB/	6,067,077	Martin et al.	05/23/2000
/JB/	6,104,382	Martin et al.	08/15/2000
/ / iB/	6.275.213	Tremblay et al.	08/14/2001

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				F	OREIGN	PATENT DOCUMENTS		
Examiner Initials*	Cite No.1	Office ¹	Foreign Patent Do	K	nd Code ³ if known)	Name of Patentee or Applicant of Cite Document	Date of Publication of Cited Document MM-DD-YYYY	T ⁴
		EP	0 349 086		Al	Stork Kwant B.V.	01/03/1990	
		JP	H4-8381			Taito Corporation	01/13/1992	
		JP	H2-185278			Taito Corporation	07/19/1990	
		JP	H7-24147			Sega Corporation	01/27/1995	
		JP	H5-192449	_/		Taito Corporation	08/03/1993	
		JP	4-34610	_			02/05/1992	
	1	UK	2254911A				10/21/1992	
		PCT	WO9502233		7		01/19/1995	
	1	PCT	WO9520787			7	08/03/1995	
		PCT	WO9520788				08/03/1995	
	Ī	PCT	WO9532459		7		11/30/1995	

		OTHER PRIOR ART – NON PATE OF LITERATURE DOCUMENTS	
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		Baigrie, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings of Interservice/Industry Training Systems Conference, pp. 247-254, November 6-8, 1990	
		Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
		Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives pp. 1-131, May 1990, archived 8/14/90	
		Brooks et al., "Hand Controller for Teleoperation - A State-of-the art Technology Survey and Evaluation," JPL Publication 85-11, NASA-CR-173890; N85-28559, pp. 1-84, 03/1/1985	
		Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990	
-		Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-46, 05/02/1993	
		Snow et al., 'Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; YPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989	
		Ouh-Young, Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990	
		Tadros, Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive, pp. 1-88, February 1990, archived 8/13/90	
		Cald ell et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 555-960, 1993	
		delstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, pp. 1-12, 1992	

	/		 <u> </u>
Examiner		Date	
Signature		Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Please type a plus sign (+) inside this box 🖈 PTO/SB/08A (08-00) Complete if Known Substitute for form 1449A/PTO **Application Number** INFORMATION DISCLOSURE Filing Date February 19, 2004 STATEMENT BY APPLICANT Louis B. ROSENBERG First Named Inventor **Group Art Unit** (use as many sheets as necessary) Examiner Name Attorney Docket Number IMMR-050/04US Sheet of et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WAII-I 100, pp. 332-337 Stanley et M., "Computer Simulation of Interacting Dynamic Mechanic Processors," DCC-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992 "Computer Simulation of Interacting Dynamic Mechanical Systems Using Dignibuted Memory Parallel Russo, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992 Kontarinis et al., "Display of High-Frequency Tactile Information to Teleoperators) Telemanipulator Technology and Space Telerobotics, Word S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueired et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990 Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90 Bejczy, "Sensors, Controls, and Man Machine Interface for Advance, Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980 Bejezy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFToMM, Sep. 8-12, 1981 McAffee et al., "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL 1988, JPL D-5172 system for Synthesizing Texture for a Force-Feedback Display," Ph.D. Minsky, "Computational Haptics: The Sandpaper Dissertation, MIT, June 1995, archived 7/6/95 Jacobsen et al., "High Performance, Dextrous Telephototic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, My 21-2 1991 Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30-Oct. 1, 1992 IBM Technical Disclosure Bulletin, "Moyee Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990 Terry et al., "Tactile Feedback in A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988 Howe, "A Force-Reflecting Telesperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992 Eberhardt et al., "OMAR - A Haptic display for speech perception by deal and deaf-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993 Rabinowitz et al., "Mundimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987 Bejezy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference, The American Society of Mechanical Engineers, San Francisco, CA, August Q-15, 1980 Bejczy et al., "Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Electronics, Vol. 41, No. 3, August 1995 Marcy, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994 Beltzy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 987 IEEE, 1987 SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994. Examiner Date Signature Considered

*EXAMPTER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance

and not considered. Include copy of this form with next communication to applicant

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Examiner		Date	i	\
Signature		Considered		

Schmult, Brian et al., "Application Areas for a Force-Feedback Joystick," ASME 1993, DSC-Vol. 49, Da.

1974, pp. #81-190.

Tavkhelidz, et al., "Kinematic Analysis of Five-Link Spherical Mechanisms," Mechanism and Machine Theory, Vol., 9,

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

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(use as many sheets as necessary)		Examiner Name				
Sheet	8	of	8	Attorney Docket Number	IMMR-050/04US	

	Russo, "The Design and Implementation of a Three Degree of Errodom Force Submitted Output Joysuck", Submitted to the
	Department of Mechanical Engineering on May 11, 1990.
/JB/	Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Engineering, Univ. of British Columbia, 1993, pp. 1-27.
/JB/	Brooks, F. et al., "Project GROPE— Haptic Displays for Scientific Visualization," Computer Graphics, Vol. 24, No. 4, 1990, pp. 177-185.
/JB/	Millman, P. et al., "Design of a Four Degree-of-Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," IEEE CH2969-4, 1991, pp. 1488-1492.
/JB/	Ramstein, et al., "The Pantograph: A Large Workspace Haptic Device for a Multimodal Human-Computer Interaction," Computer-Human Interaction, CHI 1994.
/JB/	Ramstein, C., "Combining Haptic and Braille Technologies: Design Issues and Pilot Study," ASSETS '96, 2 nd Annual ACM Conf. on Assistive Technologies, 1996, pp. 37-44.
/JB/	Payette, J. et al., "Evaluation of a Force Feedback (Haptic) Computer Pointing Device in Zero Gravity", Proceedings of the ASME Dynamics Systems and Control Division, ASME 10/17/1996, pp. 547-553.
/JB/	Iwata, H., "Artificial Reality with Force-feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, Vol. 24, No. 4, 1990, pp. 165-170.
/JB/	Hirota, Koichi et al., "Development of Surface Display," IEEE 0-7803-1363-1, 1993, pp. 256-262.
/JB/	Bostrom, M. et al., "Design of An Interactive Lumbar Puncture Simulator with Tactile Feedback," IEEE 0-7803-1363-1, 1993, pp. 280-286.

Examiner	/Jeffery Brier/	Date	09/25/2007	
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^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Complete if Known Substitute for form 1449A/PTO 10/780,852 **Application Number** INFORMATION DISCLOSURE **Filing Date** February 19, 2004 Louis B. Rosenberg STATEMENT BY APPLICANT First Named Inventor 2173 Art Unit Unassigned (use as many sheets as necessary) **Examiner Name** IMMR-050/04US 3 Attorney Docket Number Sheet

			U.S. PATENT DOC	UMENTS	
	-	Document Number		·	
Examiner	Cite No.1	Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
JB/		6,422,941	7/23/2002	Thorner et al.	
7JB/		6,160,489	12/12/2000	Perry et al.	
7JB/		6,111,577	8/29/2000	Zilles et al.	
/JB/		5,690,582	11/25/1997	Ulrich et al.	
/JB/		5,575,761	11/19/1996	Hajianpour	
JJB/		5,437,607	8/1/1995	Taylor	
/JB/		5,436,622	7/25/1995	Gutman et al.	
/JB/	,	5,283,970	2/8/1994	Aigner	
7JB/		5,186,695	2/16/1993	Mangseth et al.	
7JB/		5,175,459	12/29/1992	Danial et al.	
/JB/		5,165,897	11/24/1992	Johnson	
/JB/		5,022,384	6/11/1991	Freels	
73B7 1		4,885,565	12/5/1989	Embach	
/JB/		4,484,191	11/20/1984	Vavra	
/JB/		4,464,117	8/7/1984	Foerst	
/JB/		4,333,070	6/1/1982	Barnes	
/JB/		4,262,549	4/21/1981	Schwellenbach	<u> </u>
/JB/		4,127,752	11/28/1978	Lowthorp	
/JB/		2,972,140	2/14/1961	Hirsch	

		Foreign Patent Document			Name of Patentee or	Pages, Columns, Lines, Where Relevant	
Examiner Initials*	Cite No.1	Country Code ³	Number ⁴	Kind Code ^s (il known)	Publication Date MM-DD-YYYY	Applicant of Cited Document	Passages or Relevant Figures Appear
		_IP	H2-185278		7/19/1990	Taito Corporation	
		JP	H4-8381		1/13/1992	Froch Co. and Key- Planning Co.	
		JP	H7.24147		1/27/1995	Sega Gerporation	
		JP	H5-192449		8/3/1993	Taito Corporation	

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PTO/SB/08A (10-01)
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Complete if Known Substitute for form 1449A/PTO 10/780,852 **Application Number** INFORMATION DISCLOSURE February 19, 2004 Filing Date Louis B. Rosenberg STATEMENT BY APPLICANT First Named Inventor 2173 Art Unit Unassigned (use as many sheets as necessary) **Examiner Name** IMMR-050/04U9 2 Attorney Docket Number Sheet

	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for interaction with Virtual and Remote Environments," Master on Science Thesis, MIT, Aug. 1990, archived Nov. 8, 7990.	
	CALDER, "Design of A Force Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, May 1983, archived June 23, 1983.	
	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, July 1988.	
	BLISS, "Optical-to-Tactile Image Conversion for the Blind." <i>EEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.	
	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, Harvard Univ., 1995.	_
	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.	
	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994	
	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Nournal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1955.	
	PIMENTEL et al., "Visual Reality: through the new looking glass," 2 rd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
	*Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide, 4/5/1994.	
	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and its Use in the Virtual Reality Enviropment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies, Chap. 9, pp. 349-414.	
/	LAKE, "Cyberman from Logitech," at http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html, 1994.	
		Include name of the author (in CAPITAL LETTERS), title of the article (which appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), daty page(s), volume-issue number(s), publisher, city and/or country where published. PATRICK, "Design, Colstruction, and Testing of a Fingerip Tactile Display for/interaction with Virtual and Remote Environments," Master of Science Thesis, MIT, Aug. 1990, archived Nov. 8, 7990. CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For eleoperator Robot Control," Bachelor of Science Thesis, MIT, May 1983, archived June 23, 1983. WIKER, "Teletouch Display Development: Phase 1 Report," Techsical Report 1230, Naval Ocean Systems Center, San Diego, July 1988. BLISS, "Optical-to-Tactitle Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970. JOHNSON, "Shape-Memory Alloy Tactile Feedback Ictuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990. KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, Harvard Univ., 1995. AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992. EBERHAROT et al., "Inducing Dysamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systeps and Control. Volume 1, ASME 1999. GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Normal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995. PIMENTEL et al., "Vidual Reality: through the new looking glass," 2 rd Edition; Mograw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994. "Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide, 4/5/1994. OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on

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Signature	Considered	

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		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS
Examiner Initials *	Cite	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), edume-issue number(s), publisher, city and/or country where published.
		*Component Maintenance Manual With Illustrated Parts List, Coaxiel Control Shaker Part no. C-25502, Safe Flight Insurance Corporation, Revised 28 January 2002 (3 pages).
		*Technical Manual Overhaul locations With Parts Breakdown, Coaxial Control Shaker Part no. C-25502, Safe Flight Instrument Corporation, Revised 15 July 1980 (25 pages).
		SCANNELL, 'Taking a Joystick Ride,' Computer Currents, Boston Edition, Vol. 9, No. 11, November 1394
/JB/		YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992
		NOLL, Wan Mechine Tactile," SID Journal, July/August 1972 Issue.
		ROSENBERG. "Vidual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," Ph.D. Bissenation, Stanford University, June 1994.

Examiner Signature	/Jeffery Brier/	Date Considered	09/24/2007

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Application Number 10/780,852

Filling Date February 19, 2004

First Named Inventor Louis B. ROSENBERG

Art Unit 2173

Examiner Name Unassigned

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		Foreign Patent Document				Pages, Cotumns, Lir Name of Patentee or Where Relevant	Pages, Columns, Lines, Where Relevant
Examiner Initials*	Cite No.1	Country Code	Number ⁴ Kind C	Code ⁶ (if known)	Publication Date MM-DD-YYYY	Applicant of Cited Document	Passages or Relevant Figures Appear
		EP	0085518	A1	08-1983		
		wo	96/16397		05-1996		
		wo	96/89944		12-1996		
		JP	4-34010		02-1992		
		GB	225491		10-1992		
		wo	9502233		01-1995		
		wo	9502801		01-1995		
	·	wo	9520787		08-1995		
		wo	9520788		08-1995		
	<u> </u>	wo	9532459		11-1995		
		wo	9616397		05-1999		
		wo	9622591		07-1996		
		wo	9642078		12 1996		
	 	WO	9712357		94-1997		l

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		OTHER PRIOR ART - NON PATEN	IT LITERATURE	DOCUMENTS
xaminer	Cite No.1	Include name of the author (in CAPITAL LET item (book, magazine, journal, serial, syn number(s), publisher, ci	nposium, catalog, Iv and/or country v	etc.), date, page(s), volume-issue
?	10	Curso Waldo, "Designer's Corner-Useful Tech pp. 63.	nology for Your Id	ea File Design News," March 7, 1994,
		Akametsu, et al., "Multimodal Mouse: A Mouse Presence, vol. 2, No. 1, Winter 19994, pp. 73-	80.	
		Kelley, et al., "On the Development of a Force User Interface," Symp. on Haptic Interfaces fo Mech. Eng. Congress and Exhibition, Nov. 19	r Virtual Environm	and its Integration into a Graphical ent and Teleoperator Systems, Int'i
		Hayward, et al., Design and Multi-Objective C from Advances in Robot Kinematics and Com	Optimization of a Li putationed Geome	1994 Kluwer Academic
		Winey III, Calvin Mccoy, "Computer Simulated and Vehicle Control," MIT,, Jun. 1981, pp. 1-7	9.	
/JB/		Tan, Hong Z et al., "Manual Resolution of Compliance When Work and Force Cues are Minimized," ASME 1993, DSC-vol. 49, pp. 99-104.		
/JB/		Kotoku, Tetsuo, "A Predictive Display with Force Feedback and its Application to Remote Manipulation System with Transmission Time Display," IEEE 1992, Jul. 7-10, 1992, pp. 239-246.		
/JB/		Slocum, Alexander H., Precision Machine Des "12-V Voice Coil Motor Driver," Si9961 Jun. 6	, 1994, pp. 4-10-4-	·16.
		Kotoku, Tetsuo et al., "Enviroment Modeling for Systems," IEEE Nov. 3-5, 1991, pp. 99-1004.		
		Bejczy, Antal K., The Phantom Robot: Predictions, pp. 546-550.		
/JB/		Tan, Hong Z., et al., "Human Factors for the E Srinivasan, Eberman, & Chang, ASME WAM	Design of Force-Re 1994, pp. 1-11.	eflecting Haptic Interfaces," Tan,
/JB/		Iwata, Hiroo et al, Volume Haptization, IEEE 1993, pp. 16-18.		
/JB/		Fischer, Patrick et al., "Specification and Desi		
		Burdea, Origoro et al., "Distributed Virtual Fer	ee Feebeck," IES	5, May 2, 1993, pp. 25-44
/JB/		Rosenberg, Louis B., "The Use of Virtual Fixt Performance in Remote Environments," Air F	ures as Perceptua orce Material Com	l Overlays to Enhance Operator mand, Sep. 1992, pp. 1-42.
Examiner Signature		/Jeffery Brier/	Date Considered	09/24/2007

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Complete if Known Substitute for form 1449A/PTO 10/780,852 **Application Number** INFORMATION DISCLOSURE February 19, 2004 Filing Date STATEMENT BY APPLICANT Louis B. ROSENBERG First Named Inventor 2173 Art Unit Examiner Name Unassigned (use as many sheets as necessary) IMMR050/04US of | 8 Attorney Docket Number Sheet

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS
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/JB/		Rosenberg, Louis B. et al., "Perceptual Decomposition of Virtual Haptic Surfaces," IEEE, Oct. 1993.
/JB/		Rosenberg, Louis B., "Virtual Fixtures as Tools to Enhance Operator Performance in Telepresence Environments" SPIE Telemanipulator Technology, Mar. 1993.
/JB/		Rosenberg, Louis B., "Virtual Haptic Overlays Enhance Performance in Telepresence Tasks," SPIE 1994.
		Burdea, Girgore et al., "Dextrous Telerobotics with Force Feedback-An Overview," Robotica 1991, vol. 9.
		Yamakita, M. et al., Tele Virtual Reality of Dynamic Mechanical Model, IEEE Jul. 7-10, 1992, pp. 1103-1110.
/JB/		Ouh-young, Ming et al., "Force Display Performs Better than Visual Display in a Simple 6-D Docking Task," IEEE 1989, pp. 1462-1466.
		Kim, Won S. et al., "Graphics Displays for Operator Aid in Telemanipulation," IEEE 1991, pp. 1959-1067.
		Hannaford, Blake et al., "Performance Evaluation of a Six Asic Generalized Force-Reflecting Teleoperator," IEEE May/Jun. 1991, vol. 21, No. 3, pp. 620-633.
/JB/		Kim, Won S. et al., A Teleoperation Training Simulator with Visual and Kinesthetic Force Virtual Reality.
/JB/		Burdea, Grigore et al., "A Portable Dextrous Master with Force Feedback," Presence: Teleoperators and Virtual Environments, MIT Press, Jun. 1991.
/JB/		Fisher, S.S. et al., "Virtual Environment Display System," ACM Interactive 3D Graphics, Oct. 1986.
		"The Personal Digitizer.TM.," Immersion Human Interface Corporation 1994.
	?	"High Performance Model of the Immersion Probe." Immersion Probe-MD.TM., Immersion Human Interface Corporation.
		3D Human Interface Tool, Immersion Probe.TM., Immersion Human Interface Corporation 1994.
/JB/		Meyer, Kenneth et al., "A Survey of Position Trackers," The Massachusetts Institute of Technology 1992, Presence, vol. 1, No. 2.

Examiner	/Jeffery Brier/	Date Considered	09/24/2007
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STA'	STATEMENT BY APPLICANT			First Named Inventor	Louis B. ROSENBERG
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Sheet	8	of	8	Attorney Docket Number	IMMR050/04US

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS
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		Smilli, Geoffrey, "Call It Palpable Progress," Business Week, Oct. 9, 1995, pp. 93, 96.
, , , , , , , , , , , , , , , , , , , 		Hemdon, J.N. et al., "The State-of-the-Art Model M-2 Maintenance System," Proceedings of the 1984 National Topical Meeting on Robotics and Remote Handling in Hostile Environments, American Nuclear Society, pp. 59-65.
	7	"Proceedings of the IFIP Congress 65," International Federation for Information Processing, Information Processing 1965, vol. 3, New York, May 24-29, 1965, pp. 500:
	-	Noll, A. Michael, "Man-Machine Tactile Communication Dissertation," Polytechnic Institute of Brooklyn, Jun. 1971, pp. 1-8.
/JB/		Ouh-Young, Ming et al., "Using a Manipulator for Force Display in Molecular Docking," IEEE 1988, pp. 1824-1829.
		Wiker, Steven F. et al., "Development of Tactile Mice for Blind Access to Computers: Importance of Stimulation Locus, Object Size, and Vibrotactile Display Resolution," Proceedings of the Human Factors Society 35th Annual Meeting 1991, pp. 708-712.
		Krueger, Myron W., Artificial Neeliby 1988, pp. 54-75
······		"Foot-Operated Mouse," IBM Technical Disclosure Bulletin, Apr. 1986, vol. 28, No. 11.
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Examiner Signature	/Jeffery Brier/	Date Considered	09/24/2007

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				FOREIGN	PATENT DOCUMENTS		
	Cite Foreign Patent Document		Name of Patentee or Applicant of Cites	Date of Publication			
***************************************		Office ¹	Number ²	Kind Code ³ (if known)	Document ·	of Cited Document MM-DD-YYYY	,
		EP	0 349 086	A1	Stork Kwant B.V.	01/03/1990	
		JP	H4-8381		Taito Corporation	01/13/1992	
	1	JP	H2-185278		Taito Corporation	07/19/1990	
	 	JP	H7-24147		Sega Corporation	01/27/1995	
	†	JP	H5-192449		Taito Corporation	08/03/1993	
	1	JP	4-34610	$\overline{}$		02/05/1992	
	 	UK	2254911A	—		10/21/1992	
	†	PCT	WO9502233			01/19/1995	
	+	PCT	WO9520787			08/03/1995	
	1	PCT	WO9520788		7	08/03/1995	
	1	PCT	WQ9532459			11/30/1995	

	_	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), (ile of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), tato, page(s), volume-issue number(s), publisher, city and/or country where published	T²
		Baigrie, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings of Interservice/Industry Training Systems Conference, pp. 247-254, November 6-8, 1990	
	 	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
		Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives pp. 1-131, May 1990, archived 8/14/90	
		Brooks et al., "Hand Controlled for Teleoperation - A State-of-the Art Technology Survey and Evaluation," JPL Publication 85-11, NASA-CR-17890; N85-28559, pp. 1-84, 03/1/1985	
		Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990	
		Burden et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and	
		Snow et al., 'Model X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; YPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989	
		Ouh-Young, Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order to. 9034744, p. 1-369, 1990	
·		Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive, pp. 1-88, February 1990, archived 8/13/90	
	<u> </u>	Caldwell et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993	
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	Gotow et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Knesthetic Feedback,"	
	WA11-1100, pp. 332-337 Stanley et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel	
	Processors," D.C-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992 Russo, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in	
	Robotics, pp. 63-70, ASME 1992 Kontarinis et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and	
!	Space Telerobotics, Wol S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 993 Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote	
	Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueired, et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990	
	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
	Bejczy, "Sensors, Controls, and Man Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980	
	Bejczy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-	
	McAffee et al., "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual" IPI, 1988, IPI, D-5172	9 *
	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D.	7
	Jacobsen et al., "High Performance, Dextrous Telephotic Manipulator With Force Reflection," Intervention/ROV '91	₹.9
	Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30-Oct. 1, 1992	
	IBM Technical Disclosure Bulletin, "Moyse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990	
	Terry et al., "Tactile Feedback in A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering	
	Howe, "A Force-Reflecting Telesperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992	
	Eberhardt et al., "OMAR - Haptic display for speech perception by deal and deaf-blind individuals," IEEE Virtual Reality Annual International Symposium, Scattle, WA, Sep. 18-22, 1993	
	Rabinowitz et al., "Muldimensional tactile displays: Identification of vibratory intensity, frequency, and contractor	
	Bejczy et al., "Kingsthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference The American Society of Mechanical Engineers, San Francisco, CA, August 12-15, 1980	
	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1969	
	Outyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995	
	Marcy, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994	
	Belczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00	
	SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994.	

Examiner	Date
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^{*}EXAMPTER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

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		"Technical	Manual Overhaul Instructi	ions With Parts E	Breakdown, Coaxi	al Control Shaker Part No. C-25502," Safe Flight		
	- -	Instrument (Concretion Revised 15 Ju	ulv 1980 (23 page	≾) .		1	
		Snow, E., et	aL, Compact Force Refle	ecting Hand Cont	roller," NASA Tec	th Brief Vol. 15, No. 4, Item 153, April 1991, pp. i,	l	
	স	Howe, R. et				d System," Proceedings of SPIE, Vol. 1833, Nov.		
		Buttolo, et a	1994 nn 1-8			E, Telemanipulator and Telepresence Technologies		
		Kilpatrick,	P., "The Use of a Kinesthe	etic Supplement i	n an Interactive Gr	raphics System," Univ. of N. Carolina, 1976, pp. 1-		
		Buttolo et a	I., "Pen Based Force Disp	play for Precision Manipulation in Virtual Environments", IEEE March 1995, pp. 217-				
		Ellis, R.E.	et al., "Design and Evalua Vol. 49, pp. 55-64.	atten of a High-Performance Prototype Planar Haptic Interface" ASME December 3,				
		Adelstein B	ernard D. et al., "A High gy 1992, pp. 108-112.	Performance Tv	vo Degree of-Free	dom Kinesthetic Interface," Massachusetts Institute		
		Colgate, J.	et al., "Implementation of	•		ng Interfaces," Sept. 22, 1993.		
		A-mliantiam	Pobotic Telepheration "	May 1993 nn 25	M A	p on Force Display in Virtual Environments and its		
	1	Rosenberg,	Louis B., "The Use of	Virtual Fixtures	to Enhance Oper	ator Performance in Time Delayed Teleoperation		
		Rosenberg,	Louis B., "Perceptual I Air Force Material Comma	Design of a Virt	p. 1-41.	Contact," Center for Design Research Stanford		
	_	Burdea, Gr	igore et al., "Dextrous Tel	lerobotics with Fo	rce Feedback An	Overview," Robotica 1991, Vol. 9.		
		Research " I	Dent of Mech Eng MITA	/1992. pp. 1-24.		ce Reflecting Manipulandum for Manual Contro		
		Hannaford.	, B., et al., "Performan	nee Evaluation of a Six-Axis Generalized Force-Reflecting Teleoperator," IEEE				
		Minsky, et	al., "Felling and Seeing: Is	ssues in Force Dis	e Display", Department of Computer Science, University of North Carolina			
		Batter, et a	L, "Grope-1: Computer	Display to the Se		ersity of North Carolina at Chapel Hill, Chapel Hill	,	
		Gotow, J.K	, et al., "erception of Me			hine Interface," ISEE 1987, pp. 688-689.		
						phics, Vol. 2, 1977, pp. 97-103.		
		1974 nn #	k1-190.			anisms," Mechanism and Machine Theory, Vol., 9	2,	
		Schmult, B	rian et al., "Application A	reas for a Force-I	eedback Joystick,	" ASME 1993, DSC-Vol. 49, pg. 47-54.		
L	····							
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Filing Date February 19, 2004

First Named Inventor Louis B. ROSENBERG

Group Art Unit

Examiner Name

IMMR-050/04US

	Russo, "The Besign and Implementation of a Three Degree of Freedom Force Submitted Output Joysuck", Submitted to the	- 6
	Department of pyrechanical Engineering on May 11, 1990.	(s.
/JB/	Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Engineering, Univ. of British Columbia, 1993, pp. 1-27.	
/JB/	Brooks, F. et al., "Project GROPE- Haptic Displays for Scientific Visualization," Computer Graphics, Vol. 24, No. 4, 1990, pp. 177-185.	
/JB/	Millman, P. et al., "Design of a Four Degree-of-Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," IEEE CH2969-4, 1991, pp. 1488-1492.	
/JB/	Ramstein, et al., "The Pantograph: A Large Workspace Haptic Device for a Multimodal Human-Computer Interaction," Computer-Human Interaction, CHI 1994.	
/JB/	Ramstein, C., "Combining Haptic and Braille Technologies: Design Issues and Pilot Study," ASSETS '96, 2 nd Annual ACM Conf. on Assistive Technologies, 1996, pp. 37-44.	
/JB/	Payette, J. et al., "Evaluation of a Force Feedback (Haptic) Computer Pointing Device in Zero Gravity", Proceedings of the ASME Dynamics Systems and Control Division, ASME 10/17/1996, pp. 547-553.	
/JB/	Iwata, H., "Artificial Reality with Force-feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, Vol. 24, No. 4, 1990, pp. 165-170.	
/JB/	Hirota, Koichi et al., "Development of Surface Display," IEEE 0-7803-1363-1, 1993, pp. 256-262.	
/JB/	Bostrom, M. et al., "Design of An Interactive Lumbar Puncture Simulator with Tactile Feedback," IEEE 0-7803-1363-1, 1993, pp. 280-286.	

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